

# Representing Inequalities (Symbols)

Explore: In the NHL, no hockey stick can exceed 160cm.  
Most sticks range from 142cm to 157.5cm.

- Draw a number line to show these facts - use a convenient scale.



Notes:

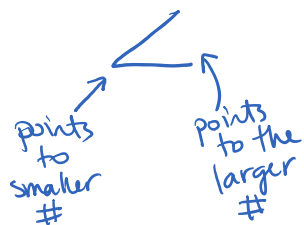
→ 160 is a boundary point for the allowable lengths of hockey sticks.

- 160 is the longest stick
- and it can be 160cm, but not longer

→ allowable lengths can be expressed as an inequality:  
$$l \leq 160\text{cm}$$

... an inequality to represent illegal sticks would be:  
$$i > 160\text{cm}$$

→ inequality → compares expressions that may not be equal



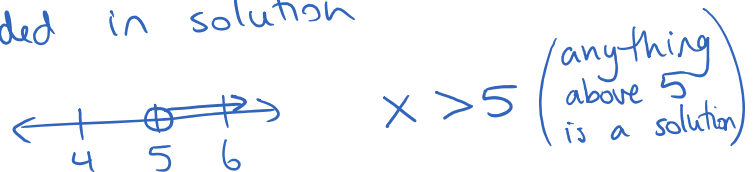
$<$	less than
$>$	greater than
$\leq$	less than or equal to
$\geq$	greater than or equal to
$\neq$	not equal

$$x > 3$$

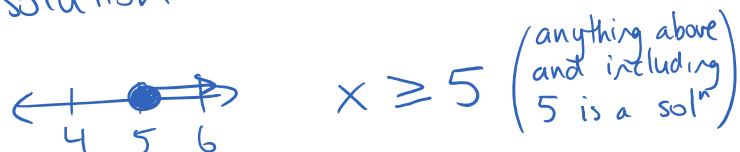
or

$$3 < x$$

→ boundary point → open circle (○) if point is not included in solution



→ closed circle (●) if point is included in solution



→ 5 is the boundary point (separates the values less than and greater than the specified value (5)).

## Examples

1) more than 40h per week earns overtime  
 a) give 2 values that earn overtime: 56h, 62h

b) express graphically:



c) express algebraically:

$$t > 40, \quad t = \text{time worked per week in hours.}$$



a) algebraically:  $x \leq 10$

b) verbally: the values/solutions are less than or equal to 10.

3)



algebraically:  $x > -3$

4)



a) algebraically:  $1 \leq x < 7$

b) verbally: the <sup>solution</sup> is the numbers between 1 and 7, including 1.